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STATE OF CALIFORNIA
STATE AND CONSUMER SERVICES AGENCY
CALIFORNIA BUILDING STANDARDS COMMISSION
2525 NATOMAS PARK DR., SUITE 130
SACRAMENTO, CA 95833
(916) 263-0916 Phone
(916) 263-0959 Fax
Email: BSC@dgs.ca.gov

Office Use Item No. _____

PARTICIPATION COMMENTS FOR THE NOTICE DATED AUGUST 22, 2006

Written comments are to be sent to the above address.

WRITTEN COMMENT DEADLINE: OCTOBER 16, 2006Date: October 16, 2006

From: Alisdair McGregor, P.E., Phd

see attached letter

Name (Print or type) _____

(Signature) _____

Ove Arup and Partners California Ltd (Arup)

Agency, jurisdiction, chapter, company, association, individual, etc.

901 Market Street
StreetSan Francisco
CityCA
State94530
Zip

I/We (do)(do not) agree with:

☒ [x] The Agency proposed modifications As Submitted on Section No. 403.13.1

and request that this section or reference provision be recommended:

☐ [] Approved ☐ [] Disapproved ☐ [] Held for Further Study ☒ [X] Approved as Amended

by the reviewing Code Advisory Committee.

Suggested Revisions to the Text of the Regulations:

403.13.1 Smoke Control System. All portions of high-rise buildings shall be provided with a smoke control system in accordance with Section 909.

Exception: When approved by the building official, office buildings having floors located no more than 200ft above grade are not required to have smoke control when:

- 1) floor-ceiling assemblies, in accordance Section 711, are designed as smoke barriers, and
- 2) operable windows are designed to minimize the effects of wind on fire growth and sprinkler operation, and
- 3) only Group B occupancies are present on floors more than 75ft above grade

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Reason: [The reason should be concise if the request is for "Disapproval," "Further Study," or "Approve As Amend" and identify at least one of the 9-point criteria (following) of Health and Safety Code §18930.]

(1) Without the proposed revision, the proposed building standard conflict with other building standards (ie. Energy Codes).

(3) The *public interest*, as expressed by other agencies of the state and local jurisdictions *is not served* by the amendment as written.

(5) The cost to the public *has not been shown* to be reasonable, based on the overall benefit to be derived from the building standards.

Please see attached letter.

HEALTH & SAFETY CODE SECTION 18930**SECTION 18930. APPROVAL OR ADOPTION OF BUILDING STANDARDS; ANALYSIS AND CRITERIA; REVIEW CONSIDERATIONS; FACTUAL DETERMINATIONS**

- (a) Any building standard adopted or proposed by state agencies shall be submitted to, and approved or adopted by, the California Building Standards Commission prior to codification. Prior to submission to the commission, building standards shall be adopted in compliance with the procedures specified in Article 5 (commencing with Section 11346) of Chapter 3.5 of Part 1 of Division 3 of Title 2 of the Government Code. Building standards adopted by state agencies and submitted to the commission for approval shall be accompanied by an analysis written by the adopting agency or state agency that proposes the building standards which shall, to the satisfaction of the commission, justify the approval thereof in terms of the following criteria:
- (1) The proposed building standards do not conflict with, overlap, or duplicate other building standards.
 - (2) The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.
 - (3) The public interest requires the adoption of the building standards.
 - (4) The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.
 - (5) The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.
 - (6) The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.
 - (7) The applicable national specifications, published standards, and model codes have been incorporated therein as provided in this part, where appropriate.
 - (A) If a national specification, published standard, or model code does not adequately address the goals of the state agency, a statement defining the inadequacy shall accompany the proposed building standard when submitted to the commission.
 - (B) If there is no national specification, published standard, or model code that is relevant to the proposed building standard, the state agency shall prepare a statement informing the commission and submit that statement with the proposed building standard.
 - (8) The format of the proposed building standards is consistent with that adopted by the commission.
 - (9) The proposed building standard, if it promotes fire and panic safety as determined by the State Fire Marshal, has the written approval of the State Fire Marshal.

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Our ref code

Date October 16, 2006

901 Market Street, Suite 260
San Francisco, CA 94103
Tel +1 415 957 9445
alisdair.mcgregor@arup.com

www.arup.com

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CALIFORNIA BUILDING STANDARDS COMMISSION
2525 NATOMAS PARK DR., SUITE 130
SACRAMENTO, CA 95833
(916) 263-0959 Fax

ARUP

Re: Public Comment on Proposed Amendments

Dear Members of the Commission:

We wish to comment on the California State Fire Marshal Express Terms, Title 24, Part 2, California Building Code, Section 403.13.1 as it relates to the design of energy efficient high-rise office buildings in California. We have proposed a suggested change to the section that recognizes the need for energy efficient building design, balances costs and benefits, recognizes the experience with such systems over the course of the last 10 years and addresses the fire safety principles published by the Statement of Reasons in the light of experience and historical fire data.

The State Fire Marshal has proposed an amendment to the 2006 IBC that would include smoke control in all portions of all high-rise buildings. Based on the rapid timeframe of this approval process, we are concerned that the full implications of this decision have not been considered. The reasoning provided for the amendment appears inadequately substantiated, does not recognize the slight value these systems provide versus their complexity, nor the actual historical fire data in different occupancies and buildings of different heights. The amendment also negatively affects the goals of the State's energy savings initiatives and general commerce and competitiveness. The smoke control systems in high rise buildings are not only costly in the short term, there are future cost impacts related to building commissioning, the expense related to delays in commissioning, and maintenance and testing costs over the life of the building. This amendment should be carefully studied and modified as it puts significant, likely unintended restrictions in the design of green, energy efficient buildings.

San Francisco has legislated that all new civic buildings be designed and constructed to the level of LEED® Silver as defined by the US Green Building Council. Designing to this level of environmental building performance requires energy modeling and in most cases overall energy performance that exceeds that required by Title 24. One strategy that is used extensively in other jurisdictions to achieve significant energy savings in buildings (and is particularly applicable to the climate in San Francisco) is that of natural ventilation and operable windows. The SFM amendment would interfere with this strategy. In discussions with fire safety experts and professional engineers, it is clear that there is no reasonable, practical way to design a smoke control system for a high-rise office building that has operable windows. Although some may suggest that such systems theoretically can be designed with automatic closing windows, the code would require all windows to be linked to the smoke control system. Linking and monitoring thousands of windows to the system cannot be considered practical or reliable. Even a "passive" smoke control system approach could not be implemented without the window closers.

The use of operable windows is one of the keys in addressing energy use in buildings. High-rise office buildings have used operable windows in many areas in the world. Two significant projects that incorporate operable

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windows in high-rise buildings and result in energy efficiency are in climates even more severe than in California: The Commerzbank in Frankfurt Germany, and the Swiss Re building in London, England. The proposed amendment puts the State of California behind in developing approaches to reduce building energy consumption.

The State of California just adopted AB32 *Air pollution: greenhouse gases: California Global Warming Solutions Act of 2006*. This requires statewide greenhouse gas emissions to be reduced to 1990 levels by 2020. Governor Schwarzenegger also issued EXECUTIVE ORDER S-20-04 which states: ...that state agencies, departments, and other entities under the direct executive authority of the Governor cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by 20% by 2015...these measures should include but not be limited to...Designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED Silver" or higher certified buildings.

San Francisco is implementing a climate action plan that calls for the reduction of 2.5 million tons per year of carbon dioxide emitted into the atmosphere. This will be accomplished greatly through initiatives in the transportation sector and the building sector. In the US, the design, construction and operation of buildings contribute 46% of all global warming gases. All new buildings will have to be designed to use much less energy than is current practice.

The American Institute of Architects has endorsed the 2030 Challenge, which sets goals for progressively increasing energy performance of new buildings toward zero fossil fuel use by 2030. This is in addition to the Regional Greenhouse Gas Initiative, the ICLEI Cities for Climate Protection (600 cities), and the Clinton Global Initiative, all of which have aggressive carbon reduction targets.

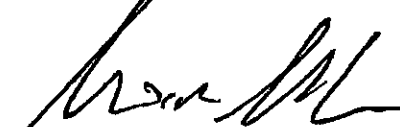
The energy impacts of conventional building design and the effects on our planet due to global warming do not seem to be part of the discussion that is taking place regarding the amendment process. All reasonable design strategies must be evaluated on their merits including fire and life safety as well as local and global environmental impacts. Buildings with high environmental performance can only be designed successfully through an integrated design process, where synergies can build upon the strengths of different disciplines. If fire and life safety experts (the same goes for all other building design professionals) are not also considering the global impacts of their decisions, we cannot hope to reduce or overcome the problems of global warming and fossil energy dependence.

It appears that the ICC has recognized that smoke control in high-rise buildings is unnecessary. Although California may be a little different in the fact that many areas are subject to seismic events, the salient issue in high-rise building fire safety in a seismic event is water supply. High-rise smoke control systems are ineffective without sprinkler systems. Therefore it cannot be concluded that smoke control systems are a necessity due to geographical reasons.

We respectfully request that the California Building Standards Commission fully consider the adverse energy and global warming impacts that the existing smoke control provision dictates. We believe that all fire and life safety issues can be resolved by a re-definition of smoke control to allow for natural ventilation in properly designed buildings.

We urge further study regarding reconsideration of the requirement. Meanwhile, we urge consideration of amending the SFM amendment by allowing office buildings, of reasonable heights, with reasonable conditions to be exempt as indicated in the proposed language.

Yours sincerely



Alisdair McGregor, PE, PhD
Principal